

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 30

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte SUBRAHMANYAM CHERUVU, THOMAS E. NOWLIN, S. CHRISTINE ONG,  
GIYARPURAM N. PRASAD and PAUL P. TONG

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Appeal No. 95-2035  
Application No. 08/083,864<sup>1</sup>

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HEARD: March 12, 1999

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Before JOHN D. SMITH, WALTZ, and SPIEGEL , Administrative Patent Judges.  
SPIEGEL , Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1 through 6 and 12 through 14. Claims 8 through 11 and 15, the only other claims pending in the application, have been withdrawn from further consideration under 37 CFR § 1.142(b) as not readable on the elected invention.

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<sup>1</sup> Application for patent filed June 28, 1993. According to appellants, this application is a continuation of Application 07/857,343, filed March 25, 1992, now abandoned, which is a continuation-in-part of Application 07/665,054, filed March 06, 1991, now abandoned.

We AFFIRM.

### BACKGROUND

The appellant's invention relates to an ethylene polymer blend consisting essentially of a high molecular weight (HMW) component and a relatively low molecular weight (LMW) component wherein the blend and the individual components have defined properties. Claims 1, 5, 6 and 12 are illustrative of the claimed subject matter and read as follows:

1. An ethylene polymer blend comprising a preponderance of polymerized ethylene having a density of at least about 0.930 g/cc, a flow index or high load melt index ( $I_{21}$ ) of at least about 2 g/10 min., a melt flow ratio (MFR) of at least about 60, and a polydispersity index of at least about 8, the polymers of said blend consisting essentially of at least about 0.3 weight fraction of a relatively high molecular weight (HMW) component having a density of at least about 0.900 g/cc, a flow index or high load melt index ( $I_{21}$ ) of at least about 0.2 g/10 min., and a flow ratio (FR) of at least about 12, and a relatively low molecular weight (LMW) component having a density of at least about 0.930 g/cc and a melt index ( $I_2$ ) no greater than about 1000 g/10 min.

5. The polymer blend of claim 1 having a density of about 0.939 to 0.960 g/cc, an  $I_{21}$  of about 5 to 50 g/10 min., a MFR of about 70 to 300, and a polydispersity index of about 10 to 18, and wherein said HMW component is present at a weight fraction of about 0.4 to 0.7, and has a density of about 0.920 to 0.950 g/cc, an  $I_{21}$  of about 0.2 to 5 g/10 min., and a FR of about 10 to 30, and said LMW component has a density of about 0.950 to 0.978 g/cc and an  $I_2$  of about 10 to 500 g/10 min.

6. The blend of claim 5 having a density of about 0.950 to 0.960 g/cc, an  $I_{21}$  of about 5 to 40 g/10 min., a MFR of about 80 to 200, and a polydispersity index of about 11 to 17, and wherein said HMW component is present at a weight fraction of about 0.45 to 0.60, and has a density of about 0.930 to 0.945 g/cc, an  $I_{21}$  of about 0.5 to 4 g/10 min., and a FR of about 16 to 25, and said LMW component has a density of about 0.970 to 0.976 g/cc and an  $I_2$  of about 30 to 300 g/10 min.

12. The polymer blend of claim 13 produced by a process comprising

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contacting in a first gas phase, fluidized bed reaction zone under polymerization conditions, a gaseous monomeric composition comprising a major proportion of ethylene and, optionally, hydrogen, with a catalyst as hereinafter defined, the hydrogen/ethylene molar ratio ( $H_2/C_2$  ratio) being no higher than about 0.35 and the ethylene partial pressure being no higher than about 100 psia, to produce said HMW component associated with catalyst particles, transferring said HMW component associated with catalyst particles to a second gas phase, fluidized bed reaction zone into which is also fed hydrogen and a gaseous monomeric composition comprising a major proportion of ethylene, under polymerization conditions including a  $H_2/C_2$  ratio of at least about 0.6 and at least about 1.5 times that in said first reaction zone, and an ethylene partial pressure of at least 1.7 times that in said first reaction zone, to produce said LMW component deposited on and within the HMW component associated with catalyst particles, said catalyst is selected from the group consisting of 1), 2) and 3), wherein 1) is a supported Ti/Mg complex precursor prepared by the interacting of a previously dried hydroxyl-containing, solid, inorganic carrier slurried in a non-polar solvent with a dialkylmagnesium such that no substantial excess of magnesium remains in the slurry, and subsequently reacting the resulting supported Mg-containing intermediate with at least sufficient titanium tetrachloride to react with the hydroxyl groups on the carrier and form said precursor containing substantially no free  $TiCl_4$ , said precursor being used together with a hydrocarbyl aluminum cocatalyst; 2) is a supported Ti/Mg complex precursor prepared by treating a magnesium oxide ( $MgO$ ) support with an organic acid, reacting the treated support with titanium tetrachloride, and pre-reducing the catalyst with an aluminum alkyl, said precursor being used together with a hydrocarbyl aluminum cocatalyst; and 3) is a catalyst comprising chromium oxide and tetravalent titanium supported on a refractory oxide in which at least 75% of its pore volume is in pores of about 200 to 500 Angstroms average pore diameter.

According to appellants, claims 5, 6 and 12 are to be individually considered separately from claims 1-4, 13 and 14 (Brief page 3).

The prior art reference of record relied upon by the examiner in rejecting the appealed claims is:

Bailey et al. (Bailey)

4,461,873

Jul. 24, 1984

### ISSUES

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The issues presented for review are: (1) whether the examiner erred in rejecting claims 1-6 and 12-14 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as unpatentable over Bailey, and (2) whether the examiner erred in provisionally rejecting claims 1-6 and 12-14 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 3, 4, 6, 8, 9, 13 and 14 of copending application 08/083,866.

### DELIBERATIONS

Our deliberations in this matter have included evaluation and review of the following materials: (1) the instant specification, including all of the claims on appeal, (2) appellants' Appeal Brief, (3) the Examiner's Answer, (4) the appellants' Reply Brief, (5) the above-cited prior art reference, and (6) the pending claims in Application 08/083,866.

### OPINION

- 1. Rejection of claims 1-6 and 12-14 under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103 as unpatentable over Bailey*

Bailey describes ethylene polymer blends of a high molecular weight (HMW) component, *preferably* an ethylene-mono-1-olefin copolymer, and a low molecular weight (LMW) component, *preferably* an ethylene homopolymer, useful in manufacturing films or in blow molding techniques (abstract). Bailey's *preferred* blend has density of 0.950-0.960 g/cc, a high load melt index (HLMI) of 5-12 g/10 minutes at 190E C using a load of 21.6 kg ( $I_{21.6}$ ), a melt index (MI) of 0.03-0.5 g/10 minutes

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at 190E C using a load of 2.16 kg ( $I_{2.16}$ ), a polydispersity ( $M_w/M_n$ ) of 20-35, and contains about 50 to about 55 weight % of the high molecular weight component. Bailey's *preferred* high molecular weight component has a density of about 0.930-0.945 g/cc, and a HLMI of 0.2-0.6 g/10 minutes at 190E C using a load of 21.6 kg. Bailey's *preferred* low molecular weight component has a density of about 0.950-0.975 g/cc, and a melt index (MI) of 100-300 g/10 minutes at 190E C with a load of 2.16 kg ( $I_{2.16}$ ). Density was determined according to ASTM standard D 1505-68, MI and HLMI were according to ASTM standard D 1238-65T.  $M_n$  and  $M_w$  were determined by size exclusion chromatography (see Tables I and III; column 3, lines 24-35). Using the HLMI and MI data provided, the examiner calculated Bailey's preferred blend to have a "melt flow ratio"<sup>2</sup> of 10-400 (Answer page 3, fn 1). Bailey does not disclose an intermediate load melt index or a flow ratio<sup>3</sup> for his preferred HMW component. However, the examiner maintains the claimed HMW flow ratio would have been inherent in Bailey

because Bailey teaches a preferred  $M_w/M_n$  of 4-9 for said high molecular weight polymer and because all of the other properties of the claimed blends and Bailey's preferred blends are substantially identical. (Answer page 4, paragraph two)

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<sup>2</sup>The specification defines "melt flow ratio" as (high load melt index)/(melt index) using a high load of 21 kg versus a melt load of 2 kg (page 6). Bailey uses slightly different loads, i.e. a high load of 21.6 kg versus a melt load of 2.16 kg.

<sup>3</sup>The specification defines "flow ratio" as (high load melt index)/(intermediate load melt index) using a high load of 21 kg and an intermediate load of 5 kg (page 7).

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Thus, it is the examiner's position that Bailey's preferred blend is identical or substantially identical with the claimed blend. In the alternative, the examiner argues

Assuming *arguendo* that Bailey's preferred composition does not satisfy the high molecular weight polymer FR [flow ratio] or the blend MFR [melt flow ratio], it would have been obvious to arrive at the claimed subject matter because it appears that Bailey's Table I generically teaches compositions satisfying the claimed values and the person of ordinary skill in the art would have expected successful results for all embodiments falling within Bailey's generic disclosure. (Answer page 5, paragraph two)

The law of anticipation does not require that the reference teach what the appellants are claiming, but only that the claims on appeal "read on" something disclosed in the reference. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), *cert. denied*, 465 U.S. 1026 (1984). We find the examiner had a reasonable basis for believing the claimed invention "reads on" the preferred ethylene blend, the preferred HMW component and the preferred LMW component of Bailey. Where, as here, the claimed and prior art products reasonably appear to be substantially the same, the burden is shifted to appellants to prove the product of the prior art does not necessarily possess characteristics attributed to the claimed product. *In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990); *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977). In our view, appellants have not met their burden.

Appellants argue the polydispersity indices of claims 5, 6 and 12 are excluded by Bailey's disclosed blend polydispersity of generally greater than 18 and preferably 20-35, especially since "about" does not modify the upper end of the polydispersity ranges as recited in claims 5 and 6 (Brief

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pages 4-6 and 8). However, claims in a patent application are given their broadest reasonable interpretation consistent with the specification during prosecution of a patent application. *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989). Appellants do not point to where the specification or the file history of this application establishes that the claim language "about" only modifies the lower limit of a recited range. *Carroll Touch Inc. v. Electro Mechanical Systems Inc.*, 15 F.3d 1573, 1577, 27 USPQ2d 1836, 1840 (Fed. Cir. 1993). Thus, we agree with the examiner that "about" modifies the entire recited range (Answer page 8). *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990) (a carbon monoxide concentration of "about 1-5%" does allow for concentrations slightly above 5%). Furthermore, a claim covering several compositions is "anticipated" if any one of the compositions is in the prior art. *Titanium Metals Corp. of Am. v. Banner*, 778 F.2d 775, 782, 227 USPQ 773, 779 (Fed. Cir. 1985). Cases where the claimed ranges "overlap or lie inside ranges disclosed by the prior art may be patentable if the applicant can show criticality in the claimed range by evidence of unexpected results". *In re Wertheim*, 541 F.2d 257, 267, 191 USPQ 90, 100 (CCPA 1976). Appellants have not made such a showing. Therefore, we find (1) that the polydispersity index of "at least about 8" of claim 1 is described by Bailey, and (2) that a polydispersity index of "about 18" (claim 5), "about 17" (claim 6), or "18" (claim 12) "reads on" Bailey's polydispersity index of 20.

Appellants argue Bailey cannot anticipate the claimed blend because Bailey fails to disclose either the melt flow ratios recited in claims 1, 5 and 6 or the examiner's method of calculating melt flow



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ratio (Brief pages 6-7, 9 and 11-12). However, appellants have not offered any evidence to prove that Bailey's polymers do not possess the claimed flow ratios. The discovery of a new property or use of a previously known product, even when the property and use are unobvious from the applied prior art, cannot impart patentability to the known product. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 782, 227 USPQ 773, 777-78 (Fed. Cir. 1985).

Appellants' argument that the examiner is "picking and choosing" from various teachings in Bailey (Brief page 8) is not well taken based upon the examiner's explicitly stated reliance on the *preferred* embodiment of Bailey (Answer page 5, lines 8-10 and the paragraph bridging pages 6-7 in the Final Office action mailed February 23, 1994).

Appellants further argue Bailey neither anticipates nor enables the product-by-process of claim 12 because Bailey does not describe the catalysts or conditions used for producing blend components (Brief pages 8-11). However, given Bailey's disclosure of using a high activity titanium/magnesium catalyst in conjunction with organoaluminum cocatalysts to produce the HMW or LMW polymers (column 5, lines 27-33; column 3, lines 54-62), we are convinced the Bailey patent disclosure is an enabling prior art disclosure. A U.S. patent, e.g., Bailey, is presumed valid (35 U.S.C. § 282), and this presumption of validity applies to the patent's disclosure as well as to each of its claims. *In re Spence*, 261 F.2d 244, 246, 120 USPQ 82, 83 (CCPA 1958). After reviewing all the evidence of record on the issue of enablement of the Bailey patent, it is our judgment that appellants have not provided sufficient evidence to establish that Bailey is a non-enabling disclosure with respect to the production of

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HMW and LMW components and blends as described. Appellants have not rebutted the examiner's position that this teaching would have been sufficient taken in combination with ordinary skill in the art to obtain the claimed ethylene polymers (Answer page 11). A reference anticipates a claim if it discloses the claimed invention such that a skilled artisan could take its teachings in combination with his own knowledge of the particular art and be in possession of the invention. *In re Graves*, 69 F.3d 1147, 1152, 36 USPQ2d 1697, 1701 (Fed. Cir. 1995), *cert. denied*, 116 S.Ct. 1362 (1996), quoting from *In re LeGrice*, 301 F.2d 929, 936, 133 USPQ 365, 372 (CCPA 1962). Moreover, the patentability of a product-by-process is based on the product itself. Where, as here, a product-by-process claim is rejected over a prior art product that appears to be identical to the claimed product, although produced by a different process, the burden is on applicants to produce evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Thorpe*, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985); *In re Marosi*, 710 F.2d 799, 803, 218 USPQ 289, 292-93 (Fed. Cir. 1983). In our view, appellants have not met their burden.

Appellants have not shown that the claimed blend, HMW component and LMW component are unobviously different from the preferred blend and components of Bailey. Neither the Tong I affidavit executed November 2, 1992, the Tong II affidavit executed April 5, 1993, nor the Shirodkar affidavit executed March 19, 1993 is sufficient to establish either the alleged differences between the claimed polymers and the preferred polymers of Bailey or the asserted unexpected results of improved die swell and melt flow ratios.

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Tong II acknowledges that polydispersity index and melt flow ratio **both** provide information on molecular weight distribution (page 2). Since the preferred blend of Bailey appears to have identical or substantially identical polydispersity index and melt flow ratio properties to that claimed, it would also appear to have an identical or substantially identical molecular weight distribution to that claimed. None of the affidavits provides a direct comparison of molecular weight distribution or flow ratio between the claimed polymer blends/components and the preferred polymer blends/components of Bailey.

Additionally, while appellants rely on a "calculated" comparison using Bailey's disclosed regression model equations, appellants have not provided any reasoning to show that one of ordinary skill in the art would have reasonably expected Bailey's regression model equations to be equally applicable to the experimental data of specification examples 3-5. There is no showing that the specification data was obtained under identical experimental conditions of temperature, catalyst, ethylene/comonomer ratio, etc., and, if not, what the effects of any differences might be. Indeed, Bailey used different load amounts in obtaining high load melt index and melt index data than appellants did. Appellants have the burden of explaining the data. In addition, appellants argue the Tong and Shirodkar affidavits "reflect the different requirements of film versus blow molding products" (Brief page 15). Tong I states Bailey is *targetted* to film manufacture (page 1). However, these arguments are not persuasive because Bailey explicitly states his polymer blends are useful for film manufacture **or** in blow molding techniques (abstract). Finally, the lack of flow ratio data in Bailey is not evidence that "Bailey does not suggest our products," contrary to the Tong II affidavit (Tong II, paragraph bridging pages 3-4). Therefore, based

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on this record, we find the Tong I, Tong II and Shirodkar affidavits lack sufficient probative value to overcome the rejection.

The rejection of claims 1-6 and 12-14 under 35 U.S.C. § 102(b) as anticipated by or in the alternative, under 35 U.S.C. § 103 as unpatentable over Bailey is sustained.

*2. Provisional rejection of claims 1-6 and 12-14 under the judicially created doctrine of obviousness-type double patenting copending application 08/083,866.*

The examiner states

Claims 1-6 and 12-14 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 3, 4, 6, 8, 9, 13, and 14 of copending application Serial No. 08/083, 866. Although the conflicting claims are not identical, they are not patentably distinct from each other because the two sets of claims overlap. The properties of the blend specified in the copending application are substantially the same as those recited in the instant claims.

This is a *provisional* obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.<sup>4</sup> (Answer page 6)

Appellants' arguments that film versus blow molded products have different requirements, and that the claims in this application do not recite dynamic elasticity and complex viscosity and the claims in the '866 application do not recite a polydispersity index (Brief page 15) are not persuasive. The same ethylene polymer blends can be used for either the manufacture of film or in blow molding techniques (see e.g., Bailey's abstract). Moreover, merely reciting a new property or use of a product does not

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<sup>4</sup>"Provisional" rejections of the sort here involved are authorized by MPEP § 804 and have been sanctioned by this Board (see, e.g., *Ex parte Karol*, 8 USPQ2d 1771 (Bd. Pat. App. & Int. 1988)) and by the predecessor of our reviewing court (see, e.g., *In re Wetterau*, 356 F.2d 556, 148 USPQ 499 (CCPA 1966)).

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make that product unobvious over another identical or substantially identical product. Here, the significant overlap of blend density, high load melt index and melt flow ratio, together with the significant overlap of HMW component weight fraction, density, high load melt index and flow ratio as well as the overlap of LMW component density and melt index between the two sets of claims provides a reasonable basis for believing the ethylene blend polymers of the two copending applications are identical or substantially identical. As to appellants' argument that this rejection is "premature" (Brief page 14), we note that this is a "provisional" rejection since the claims in the '866 application have not, in fact, been patented.

In light of the foregoing, we shall sustain the examiner's *provisional* obviousness-type double patenting rejection of claims 1-6 and 12-14 over claims 3, 4, 6, 8, 9, 13 and 14 of copending application 08/083,866.

#### OTHER MATTERS

In the event of further prosecution, appellants and the examiner are advised to consider whether the oath in this continuation-in-part application complies with 37 C.F.R. §§ 1.53 and 1.56.

#### CONCLUSION

In summary, (1) the rejection of claims 1-6 and 12-14 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as unpatentable over Bailey is sustained, and (2) the

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provisional rejection of claims 1-6 and 12-14 under the judicially created  
doctrine of obviousness-type double patenting as being unpatentable over claims 3, 4, 6, 8, 9, 13 and  
14 of copending application 08/083,866 is sustained.

Accordingly, the decision of the examiner is AFFIRMED.

No time period for taking any subsequent action in connection with this appeal may be  
extended under 37 CFR § 1.136(a).

AFFIRMED

JOHN D. SMITH	)	
Administrative Patent Judge	)	
	)	
	)	
	)	
	)	BOARD OF PATENT
THOMAS A. WALTZ	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
	)	
	)	
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CAROL A. SPIEGEL	)	
Administrative Patent Judge	)	

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